State-supported Institutions

Kentucky's state supported universities and colleges have been responsive in developing curricula to support Kentucky's energy industry sector. Increasingly, these programs will facilitate a student's financial and educational needs and objectives. Industry is stepping in to augment some job training programs. Moreover, once an associate degree or certificate program is completed at a community college or technical school, there are multiple energy career pathways. A student may choose to go directly into the workforce, or to matriculate into a four-year university degree program, or research program, or both. New accreditation programs are also being integrated into the curricula. Here are some of the programs offered.

Kentucky Community and Technical College System

Kentucky Coal Academy

The Kentucky Coal Academy (KCA) provides an open entry/exit training program to meet the workforce needs of the coal industry in Kentucky, across the United States and around the *world*. Through short-term instruction for new miners and continued career training, KCA equips coal workers with the skills they need to be competitive and successful in the rapidly growing and changing coal industry.

Energy Auditor Training Program

The Energy Auditor Training program is for individuals preparing to take the Building Performance Institute (BPI) Building Analyst exam. The training program focuses on the home as a system. Students receive in class training as well as hands-on training. Students learn how to use a thermal imager, blower door, and a duct blaster to evaluate home performance.

Applied Process Technology

The Applied Process Technologies Associate in Applied Science Degree program combines general education courses, technical courses in process technologies and courses specific to prepare students for entry-level positions in one of three options in chemical/refinery operations, general industry, and the power industry with options in operations or lineman careers. After completing this program, students have two options to pursue as process technicians in general industry. The student can concentrate in process technician studies in the chemical/refinery plant operations option or as a process technician in the power plant operations option. A third option for the student is to prepare for an entry level position as a lineman technician in the power and utility industries.

Energy Utility Technician | Advising Sheet (PDF)

The KCTCS Energy Utility Technician Program prepares students to become an entry level technician at a utility company and provides an opportunity for apprenticeship experience. Learn aspects of utility operation, line maintenance, underground operations, substation operations, transmission distribution and how to stay safe on the job. Students work with bucket trucks and also learn to climb utility poles.

Energy Systems Technology

The Energy Systems degree is designed to prepare graduates for entry level positions across the entire range of energy technologies. The initial option will prepare students to work safely and effectively as operators in fossil-fueled electricity generating power plants. The curriculum will also provide a background in other types of energy production and distribution, including solar, wind, geothermal, and petroleum-based as well as emerging technologies such as ethanol, biodiesel, and clean coal technologies. Graduates will have an understanding of the financial, societal, and environmental impacts of the various energy production technologies, and will be able to operate and troubleshoot the machinery and systems used in energy production.

Somerset Lineman Training Center

The Somerset Lineman Training Center has one of the most expansive indoor training facilities and comprehensive curriculums in the nation. Training at the Lineman Tech Center will prepare apprentice-level students for employment in the electrical industry. We accomplish this by using training methods that have proven to be effective in preparing individuals to be highly qualified and successful employees.

Applied Engineering Technology Degree and Certificate Programs in Alternative Energy

The Applied Engineering Technology program prepares graduates for entry into the workforce of the 21st century. With seven individual degree specializations and three certificates in state of the art topics, students will find challenging coursework as well as “hands on” laboratory work that will enhance their ability to compete in a global market. These include the following:

BS, MS in Chemistry (fuel chemistry, nuclear chemistry, combustion chemistry, etc.)
BS in Engineering Physics, Applied Physics, and Physics (principles of combustion, atomic and nuclear energy, biofuels, energy conversion, energy efficiency, etc.)
BS, MS in Biology (biomass energetics, environmental and ecological effects of energy production, etc.)
BS, MS in Geosciences (natural resources in geological formations including coal, natural gas, petroleum, etc.)

Sullivan College of Technology and Design

Heating, Air-Conditioning, Ventilation and Refrigeration (HVAC-R) Technology

The ability to maintain a constant and comfortable air quality in commercial and residential settings is a skill that will always be in demand. The objective of the HVAC-R

Technology program at Sullivan College of Technology & Design is to develop the skills and understanding necessary to obtain entry-level employment in such fields as HVAC-R sales, service, installation; facilities operation and sustainability; or energy efficiency technical work or auditing.

The curriculum focuses on basic operating principles of residential and commercial HVAC systems across the subsystems of cooling, heating, distribution, filtration and control. Emphasis is also placed on the skills and knowledge required to understand building automation systems and their efficient use of energy.

Elements of the program may also be appropriate for experienced HVAC-R technicians who may need additional training.

The University of Kentucky College of Engineering

Power and Energy Institute of Kentucky (PIEK)

Launched in 2010, the PEIK has as its goal to attract engineers to the field of power and energy and to provide them with the innovative education they will need to join the 21st century power engineering workforce.

The PEIK curricula have been carefully worked out to mesh with requirements in other engineering disciplines; typically it is electrical engineering students who specialize in power engineering, but in the Institute it will be possible for students outside electrical engineering (in mechanical, chemical, materials, biosystems, and mining) to study for certificates in power and energy at the undergraduate and graduate (Master's and Ph.D) levels.

University of Louisville J.B. Speed School of Engineering

The J. B. Speed School of Engineering offers B.S. degree programs in bioengineering, chemical, civil, electrical, industrial, and mechanical engineering, and computer engineering and computer science accredited by the Engineering Accreditation Commission (EAC) of ABET. **ABET**, Inc., formerly the Accreditation Board for Engineering and Technology, is a non-profit organization that accredits post-secondary education programs in applied science, computing, engineering, and technology.

Kentucky Energy Research Centers

The University of Kentucky's Center for Applied Energy Research

The Center for Applied Energy Research (CAER) is one of the University of Kentucky's multidisciplinary research centers. Its energy research provides a focal point for coal and environmental research in Kentucky. Research efforts are directed to: coal cleaning, beneficiation, utilization, and conversion process technologies. Environmental issues

relating to fuel use and coal combustion by-products constitute a major effort, along with the derivation of high added-value materials and chemicals from energy resources. The CAER is a non-academic unit that is staffed by professional scientists and engineers, has extensive interactions with faculty members and students, and provides analytical services for outside organizations.

CAER investigates energy technologies to improve the environment; contributes to technically sound policies related to coal, energy and the environment; adds to the teaching and instruction aim of UK by educating students from pre-college to postgraduate levels and being involved in labor force development for Kentucky; promotes UK's objective of developing and benefiting from its Intellectual Property with a balance between the publication of scientific results and patenting; and provides public service through scientific education and its energy-related competencies.

The University of Louisville's Conn Center for Renewable Energy Research

The University of Louisville's Conn Center for Renewable Energy Research (Conn Center) has made deep commitments to continued research and development of renewable energy and energy efficiency technologies. In addition, the university is committed to energy education to teach the lessons learned from our academic and R&D activities. This comes in many forms. From partnerships with companies to workshops, training, and outreach, our goal is to help provide the people of Kentucky with helpful information for a brighter energy future.

Research and Development

The Conn Center Technical Advisory Board has identified five core themes for research and development as part of the center's mission. Each research theme is led by a team leader, a senior research scientist devoting 100% effort, who will work with faculty and researchers from various Kentucky academic institutions as well as industry collaborators.

The Conn Center's five research and development themes are:

- Solar Energy Conversion
- Energy Efficiency & Conservation
- Biofuels/Biomass Conversion
- Renewable Energy Storage
- Advanced Energy Materials Manufacturing

Eastern Kentucky University's Center for Renewable & Alternative Fuels Technology

In addition to the research and development of alternative fuels, Eastern Kentucky University Center for Renewable and Alternative Fuel Technology (CRAFT) researches the applications of alternative energy sources for the production of plastics, pharmaceuticals, and other petroleum-based products.

In little more than two years of operation, as many as 10 research faculty, five graduate students and more than 15 undergraduates have actively conducted research for CRAFT. In October of 2010, the CRAFT celebrated the grand-opening of its "state-of-the-art" research facility that boasts two large laboratories for biomass analysis and algae research, as well as a smaller lab for algae incubation and microbiology research.

Academic disciplines currently represented include chemistry, agriculture, biology, environmental sciences and economics. As CRAFT's research expands, even more academic areas will be included.